Lower Socioeconomic Status is Associated with Higher Mortality in T1a Esophageal Adenocarcinoma

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BACKGROUND

- Esophageal adenocarcinoma (EAC) is the fastest growing esophageal cancer subtype in the United States[1].
- National guidelines now recommend endoscopic intervention as preferred therapy over surgery as first line treatment for T1aN0M0 EAC[2,3].
- Socioeconomic status (SES) has been linked to disparities in esophageal cancer related care[4], however, data on outcomes based on SES is limited.

STUDY AIMS

- To assess how socioeconomic status influences initial treatment decisions and survival outcomes in patients with T1a esophageal adenocarcinoma.

METHODS

- 1526 patients diagnosed with primary T1aN0M0 esophageal cancer from 2004-2015 via the November 2018 submission of the Surveillance, Epidemiology, and End-Results (SEER) database were included.
- Patients were subdivided in three socioeconomic tertiles, based on median household income of county of residence.
- Rates of endoscopic and surgical treatment; 2- and 5-year overall survival, cancer specific mortality, and non-cancer specific mortality were calculated using R-studio.

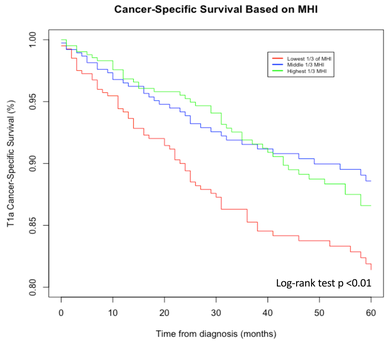
Table 1: Demographic and Tumor Characteristics by Income

	Overall	T1	T2	T3	p-value
n	1526	505	515	506	
Age at diagnosis (mean (SD))	66.15 (10.19)	65.26 (9.54)	66.35 (10.36)	66.83 (10.58)	0.043
Sex = Male (%)	1317 (86.3)	440 (87.1)	439 (85.2)	438 (86.6)	0.667
White Race	1471 (96.4)	487 (96.4)	496 (96.3)	488 (96.4)	
Median household income (dollars) (mean (SD))	60834 (1447)	45,663 (6662)	59,455 (3351)	77,379 (8359)	<0.001
% with Bachelor's degree (mean (SD))	30.49 (1002.35)	21.46 (7.03)	30.03 (5.86)	39.98 (6.87)	<0.001
% persons <150% of poverty line (mean (SD))	23.37 (7.68)	30.24 (6.82)	23.67 (4.62)	16.20 (3.37)	<0.001
% Unemployed (mean (SD))	9.66 (2.78)	10.79 (3.73)	9.79 (2.17)	8.38 (1.32)	<0.001
% Current Smoker (mean (SD))	18.47 (5.57)	23.73 (4.57)	16.58 (4.12)	15.14 (3.63)	<0.001
Grade (%)					0.438
Well differentiated; Grade I	259 (17.0)	78 (15.4)	94 (18.3)	87 (17.2)	
Moderately differentiated; Grade II	523 (34.3)	181 (35.8)	177 (34.4)	165 (32.6)	
Poorly differentiated; Grade III	204 (13.4)	69 (13.7)	66 (12.8)	69 (13.6)	
Undifferentiated; anaplastic; Grade IV	15 (1.0)	9 (1.8)	2 (0.4)	4 (0.8)	
Unknown	525 (34.4)	168 (33.3)	176 (34.2)	181 (35.8)	
Tumor size in mm (mean (SD))	15.20 (13.31)	15.94 (13.94)	15.47 (12.94)	14.10 (12.97)	0.255
Received endoscopic therapy (%)	714 (46.8)	197 (39.0)	261 (50.7)	256 (50.6)	<0.001

T1: $20,000 – $54,390, T2: $54,390 - $65,500, T3: $65,500 – $106,520

Table 2: Survival Outcomes Based on Income

	Overall	T1	T2	T3	p
n	1196	396	408	392	
2-year overall survival (%)	1060 (88.6)	333 (84.1)	366 (89.7)	361 (92.1)	0.001
5-year overall survival (%)	939 (78.5)	290 (73.2)	331 (81.1)	318 (81.1)	0.008
2-year cancer specific mortality (%)	81 (6.8)	40 (10.1)	22 (5.4)	19 (4.8)	0.005
5-year cancer specific mortality (%)	142 (11.9)	62 (15.7)	38 (9.3)	42 (10.7)	0.014
2-year non-cancer mortality (%)	55 (4.6)	23 (5.8)	20 (4.9)	12 (3.1)	0.172
5-year non-cancer mortality (%)	115 (9.6)	44 (11.1)	39 (9.6)	32 (8.2)	0.373



RESULTS

- The lowest median household income (MHI) group had a higher percentage of Black patients, lower percentage of Asian patients, higher proportion of smokers, higher unemployment rate, lower education level, compared to higher income groups.
- Patients within the lowest median household income group experienced higher cancer-specific mortality at 2-years ($p<0.01$) and 5-years ($p<0.02$) and lower overall survival at 2 and 5-years ($p<0.01$) as compared to patients in higher income tertiles.
- Patients within the higher income tertile were more likely to receive endoscopic intervention ($p<0.001$) as primary treatment for their cancer

CONCLUSIONS

- Lower median household income is associated with significantly higher rates of cancer-specific mortality and lower rates of endoscopic intervention to treat patients with T1a esophageal adenocarcinoma without lymph node involvement.
- Population-based strategies aimed at increasing access to screening, improving access to high-volume centers, and identifying other possible etiologies for these socioeconomic disparities are paramount to improving patient outcomes in early esophageal cancer.

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